

## **Nonlinear laser beam dynamics in atmospheric turbulence**

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We theoretically investigate the interplay between nonlinearity and turbulence in the dynamics of laser beams propagating in free space. We restrict ourselves to the case of optical waves with power below the critical ionization threshold. We find that irradiance scintillations can be significantly reduced as compared to the linear case, provided that we use beam tracking. Interestingly the ratio of the output to the input power is increased with increasing nonlinearity even without tracking.



### **Short Bio:**

**Nikolaos K. Efremidis** received his Bachelor's degree from the Department of Physics, University of Crete in 1996, and his Ph.D. from the Department of Electrical and Computer Engineering, National Technical University of Athens in 2001. He then worked as a Postdoctoral Fellow at Lehigh University, Department of Electrical and Computer Engineering (2001-2002), at College of Optics and Photonics, University of Central Florida (2002-2004), and at the Department of Electrical and Computer Engineering, National Technical University of Athens (2005-2006). Since 2006 he joined the Department of Applied Mathematics, University of Crete where he is now Professor. Since 2017 he is also a member of the Institute of Applied and Computational Mathematics, Foundation for Research and Technology – Hellas and a visiting professor of the TEDA Applied Physics Institute and School of Physics, Nankai University. Prof. Efremidis is a Fellow of the Optical Society of America.

His research interests include the study of linear and nonlinear wave phenomena in optics and photonics and their potential applications using analytical and numerical methods. His research activity has led to the publication of more than 100 papers on international refereed journals, over 100 contributions at international conferences, including more than 30 invited presentations. According to google scholar his articles have attracted more than 10000 citations with h-index 38.